

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-8, 13-14 and 17-18 are pending in this application. Claims 1 and 5 are amended; Claims 17 and 18 are added; and Claims 15 and 16 are canceled without prejudice or disclaimer by the present amendment. Support for the new and amended claims can be found in the original specification, claims and drawings.¹ No new matter is presented.

In the Final Office Action of June 19, 2008 (herein, the Final Office Action), Claims 1-8 and 13-16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rauschnabel et al. (WO 99/63129, herein Rauschnabel), citations from U.S. Pat. 6,613,393, in view of Ichihara et al. (U.S. Pat. 4,782,477, herein Ichihara) and Casey (U.S. Pat. 4,692,233).

In response to the rejections noted above, Applicant respectfully submits that amended independent Claims 1 and 5 recite novel features clearly not taught or rendered obvious over the applied references.

Independent Claim 1, for example, is amended to incorporate the features of Claim 15 and recites, in part, a sputtering apparatus, wherein:

... the vacuum chamber includes a first film deposition area and a second film deposition area for deposition of a film on the substrate... and the vacuum chamber includes *a fifth exhaust port* on a first side wall of the vacuum chamber *between the first and second film deposition areas*, and *a sixth exhaust port* on a second side wall of the vacuum chamber *between the first and second film deposition areas*.

Independent Claim 5, while directed to an alternative embodiment, is amended to recite similar features. Accordingly, the remarks and arguments presented below are applicable to each of amended independent Claims 1 and 5.

As depicted in an exemplary embodiment at Figs. 1 and 2, the sputtering apparatus includes two exhaust ports 83, 84, which are disposed on side walls of the vacuum chamber

¹ E.g., specification at least at Figs. 1-2 and previously presented Claims 15 and 16.

between the first and second film deposition areas. As the first film deposition area and the second film deposition area carry out different reactions, the exhaust chamber (e.g. the area between the two exhaust ports 83, 84) has a low degree of pressure to separate the atmospheres of the two film deposition areas from one another. Thus, since the cylindrical substrate holder rotates within the vacuum chamber, the creation of this exhaust chamber via the two exhaust ports 83, 84 allows for a separation between the atmospheres of the two film depositions areas without using a physical partition. As shown in Figs. 1-2 and recited in new dependent Claims 17 and 18, no physical partition exists between the first and second film deposition areas.

In rejecting Claim 15, the Final Office Action relied on the Abstract and Fig. 2 of Casey and asserted that the reference teaches “using multiple vacuum pumps by placing a vacuum pump [30]-[32] per sub-chamber.” The Final Office Action then conceded that Casey “is limited in that it is not suggested to incorporate multiple vacuum pumps per sub-chamber,” but asserts that “it would have been obvious to one of ordinary skill in the art to place multiple vacuum pumps per sub-chamber for the predictable result of maintaining a vacuum, purity, and control of deposited material.”

As an initial matter, Applicant notes that Claim 15, as incorporated into Claim 1, recites that the vacuum chamber includes “a fifth exhaust port ... *between the first and second film deposition areas*, and a sixth exhaust port ... *between the first and second film deposition areas*.” Therefore, the exhaust ports are not included in each of the sub-chambers (e.g. film deposition areas), as asserted in the Final Office Action, but are instead included *between* the film deposition areas. Therefore, the claims differ from Casey, and the Office Action’s modification of Casey, at least in this regard.

As described in the Abstract and Fig. 1 of Casey, each of the sub-chambers is separated by physical partitions 5-8. Further, Fig. 2 and col. 3, ll. 23-26 of Casey describes

that each of the sub-chambers is pumped via respective exits in the wall of the chamber by its own individual vacuum pump 30-32. Therefore, since each of the respective sub-chambers in Casey are separated by physical partitions 5-8 and each are pumped by individual vacuum pumps it would not have been obvious to one of ordinary skill in the art to add exhaust ports between the sub-chambers, since each of the sub-chambers are physically partitioned from one another and include their own exhaust ports.

Furthermore, it is unclear how the configuration of Casey would allow for two exhaust ports to be located on different side walls of the chamber between a first and second sub-chamber. Due to the circular configuration of Casey it would be impossible for the chamber to include “a fifth exhaust port *on a first side wall of the vacuum chamber* between the first and second film deposition areas, and a sixth exhaust port *on a second side wall* of the vacuum chamber between the first and second film deposition areas.” Since the chamber in Casey is circular there is only one outer wall, and if the partitions 5-8 were removed it would be possible only to place one exhaust port on the outer wall between the sub-chambers, not two.

Additionally, as a basis for the finding of obviousness, the Office Action cites *In re Harza* and notes that “[i]t has been held that a mere duplication of parts has no patentable significance unless a new and unexpected result is produced.” As noted above, however, the configuration recited in amended Claim 1 of providing a plurality of exhaust ports between the first and second film deposition areas results in the creation of an exhaust chamber in the area between the two exhaust ports, thus resulting in a separation of the atmospheres between the first and second film deposition areas. Such a configuration is, therefore, not a mere duplication of parts, but instead is used to provide a separation between the first and second film deposition areas without implementing a physical partition between the first and second film deposition areas.

In rebutting arguments similar to those noted above, the Advisory Action of September 19, 2008 (herein, the Advisory Action) appears to have considered the claimed features directed to fifth and sixth exhaust ports, but asserts that the combination of Casey and Rauschnabel reads on this claimed feature. Particularly, the Advisory Action asserts that incorporating an exhaust pump 31, as disclosed in Casey, between the film deposition areas 61, 62 at chamber areas 47, 50 of Rauschnabel reads on the claimed configuration.

However, as described at col. 7, ll. 1-20 of Rauschnabel, the chamber areas 47, 50 include a supply conduit 43 for supplying a silicon monomer. Thus, incorporating an exhaust pump in each of these areas would cause the supplied silicon monomer to be immediately extracted from the chamber areas 47, 50 and not “restrict gas leakage between adjacent chambers, thus leading to increased purity and control of deposition material for each chamber,” as asserted in the Advisory Action. Therefore, incorporating the exhaust pump of Casey into Rauschnabel would appear to make the apparatus of Rauschnabel inoperable since the silicon monomer would immediately be evacuated from the chamber areas.

Further, Ichihara is not relied upon to reject the above noted claimed feature, and Applicant respectfully submits that this reference fails to cure the above noted deficiencies of Casey and Rauschnabel. Therefore, Rauschnabel, Ichihara and Casey, neither alone, nor in combination, teach a “vacuum chamber [that] includes *a fifth exhaust port* on a first side wall of the vacuum chamber *between the first and second film deposition areas*, and *a sixth exhaust port* on a second side wall of the vacuum chamber *between the first and second film deposition areas*,” along with all the additional limitations recited in amended independent Claims 1 and 5.

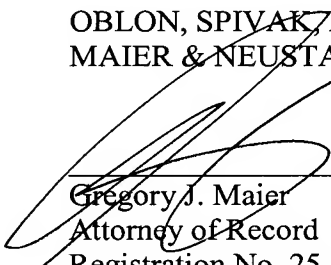
Accordingly, Applicant respectfully requests that the rejection of Claims 1 and 5 (and Claims 2-4, 5-8, and 13-14, which depend therefrom) under 35 U.S.C. § 103 be withdrawn.

Further, new Claims 17 and 18 are added, which depend from Claims 17 and 18 and recite that “no physical partition exists between the first and second film deposition areas.” Applicant respectfully submits that Rauschnabel, Ichihara and Casey, even if combined, fail to disclose an apparatus as recited in independent Claims 1 and 5 in which “no physical partition exists between the first and second film deposition areas,” as required by new dependent Claims 17 and 18.

Consequently, in view of the present amendment and light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1-8, 13-14 and 17-18 is patentably distinguishing over the applied references. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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